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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Saad A. Sirohey et al.	§	Group Art Unit: 2624
Serial No.: 09/996,301	§	Examiner: Chen, Wenpeng
Filed: November 21, 2001	§	
For: IMAGE TESSELLATION FOR REGION-SPECIFIC COEFFICIENT ACCESS	§	Atty. Docket: 120621/YOD/SWA/FAR GEMS:0180

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January 17, 2006 — Betty J. Broyles
Date — Betty Broyles

APPEAL BRIEF PURSUANT TO 37 C.F.R. §§ 41.31 AND 41.37

The Commissioner is authorized to charge the requisite fee of $500.00, and any additional fees which may be necessary to advance prosecution of the present application, to Account No. 50-2401, Order No. 120621/YOD (GEMS:0180).

Appellants hereby request a one (1) month extension in the statutory period for submission of the Appeal Brief, from December 16, 2005 to January 16, 2005, in accordance with 37 C.F.R. § 1.136. The Commissioner is authorized to charge the requisite fee of $120.00, and any other fee that may be required, to Deposit Account No. 50-2401, Order No. 120621/YOD (GEMS:0180).

This Appeal Brief is being filed in furtherance to the Notice of Appeal sent via Facsimile on September 29, 2005, and received by the Patent Office on September 29, 2005. It should be noted that a Pre-Appeal Brief Request for Review was also filed on September 29. A Notice of Panel Decision from Pre-Appeal Brief was mailed to Appellants on November 16, 2005, which provided for resetting of the time period to file this Appeal Brief to December 16, 2005.

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1. **REAL PARTY IN INTEREST**

The real party in interest is GE Medical Technology Services, Inc., the Assignee of the above-referenced application by virtue of the Assignment recorded at reel 013446, frame 0645, and recorded on November 21, 2201. GE Medical Technology Services, Inc., the Assignee of the above-referenced application, as evidenced by the documents mentioned above, will be directly affected by the Board's decision in the pending appeal.

2. **RELATED APPEALS AND INTERFERENCES**

Appellants are unaware of any other appeals or interferences related to this Appeal. The undersigned is Appellants' legal representative in this Appeal.

3. **STATUS OF CLAIMS**

Claims 1-15, 17-34, 36-46, 48-53, and 62-70 are currently under final rejection and, thus, are the subject of this appeal.

4. **STATUS OF AMENDMENTS**

Appellants have not submitted any amendments subsequent to the Final Office Action mailed on June 29, 2005.

5. **SUMMARY OF CLAIMED SUBJECT MATTER**

The present technique relates generally to the field of image data compression and handling. *See* Application, page 1, lines 11-14. More particularly, the invention relates to a technique for addressing image data by image block indices for rapid transmission and selective handling of a desired area of interest. *See id.* The present application contains six independent claims, namely, claims 1, 19, 31, 38, 49, and 63, all of which have been improperly rejected and, thus, are subject to this Appeal. Examples and permutations of the subject matter of these six independent claims are summarized below with references taken from the specification and figures.

An embodiment of claim 1 relates to a method for handling image data, the method including decomposing the image data (e.g., image data sets 194, 300, 330; image data 402) into a plurality of data sets (e.g., decomposed data sets 306, 316; data sets 332, 334, 336; data map 418,432) using lossless wavelet decomposition; tessellating at least one decomposed set of the plurality of data sets into a plurality of blocks (e.g., sub-bands 308, 310, 312, 314, 320, 322, 324, 326, 408, 410, 412, 452, 454, 456, 458); compressing each tessellated block of the plurality of blocks using lossless compression; and compiling a data stream (e.g., data stream 342, 404) comprising the compressed plurality of blocks arranged sequentially in a desired order based upon the decomposition and tessellation. *See* Application, page 26, line 20 – page 27, line 7; page 30, line 20 – page 31, line 4; page 38, line 24 – page 41, line 28; FIGS. 13-15, 18, 19, 21A, 21B.

An embodiment of claim 19 relates to a method for retrieving image data, the method including: identifying data according to a decomposition level index and tessellation block indices, wherein the decomposition level index refers to data sets (e.g., decomposed data sets 306, 316; data sets 332, 334, 336; data map 418, 432) generated from an image (e.g., image data 402) by lossless wavelet decomposition, and the tessellation block indices refer to blocks (e.g., sub-bands 308, 310, 312, 314, 320, 322, 324, 326, 408, 410, 412, 452, 454, 456, 458) tessellated from the data sets (e.g., decomposed data sets 306, 316; data sets 332, 334, 336; data map 418, 432); and transmitting a data stream (e.g., data stream 342, 404) of the data identified by the decomposition level index and the tessellation block indices, wherein the data stream (e.g., data stream 342, 404) is ordered based upon the decomposition level index and the tessellation block indices. *See* Application, page 26, line 20 – page 27, line 7; page 30, line 20 – page 31, line 4; page 38, line 24 – page 41, line 28; FIGS. 13-15, 18, 19, 21A, 21B.

An embodiment of claim 31 relates to a method for handling image data, the method including: decomposing the image data (e.g., image file 50; image data sets 52, 54, 56; image data sets 194, 300, 330) into a plurality of resolution levels (e.g., data map 578) using lossless wavelet decomposition; tessellating at least part of one level of the

plurality of resolution levels into a plurality of blocks (e.g., sub-bands 308, 310, 312, 314, 320, 322, 324, 326, 408, 410, 412, 452, 454, 456, 458); compressing tessellated data for the at least part using lossless compression; and storing the tessellated and compressed data by referencing the plurality of resolution levels and the plurality of blocks. *See* Application, page 26, line 20 – page 27, line 7; page 30, line 20 – page 31, line 4; page 38, line 24 – page 41, line 28; FIGS. 13-15, 18, 19, 21A, 21B.

An embodiment of claim 38 relates to a method of storing image data, the method including: decomposing the image data (e.g., image data sets 194, 300, 330; image data 402) into a plurality of resolution levels (e.g., data maps 468, 578) using lossless integer wavelet decomposition; tessellating at least part of each decomposed level of the plurality of resolution levels into a plurality of spatial blocks (e.g., sub-bands 308, 310, 312, 314, 320, 322, 324, 326, 408, 410, 412, 452, 454, 456, 458); and storing data for the plurality of spatial blocks as a plurality of addressable data blocks comprising indices for the resolution levels and spatial image blocks. *See* Application, page 26, line 20 – page 27, line 7; page 30, line 20 – page 31, line 4; page 38, line 24 – page 41, line 28; FIGS. 13-15, 18, 19, 21A, 21B.

An embodiment of claim 49 relates to a system (e.g., PACS 10) comprising an interface (e.g., input/output interface 19, compressor/decompressor interface 20) having: a decomposition module (e.g., blocks 268, 384) configured for decomposing image data using lossless wavelet decomposition to produce a plurality of data sets corresponding to a plurality of resolution levels ranging from a lowest resolution level to a highest resolution level; a tessellation module (blocks 420, 464; *see also* FIG. 14) configured for tessellating desired portions of the plurality of data sets into a plurality of spatial blocks; and an addressing module configured for indexing the desired portions into a plurality of addressable data blocks based on the resolution levels and coordinates of the spatial blocks; and a memory device configured to store the plurality of addressable data blocks. *See* Application, page 26, line 20 – page 27, line 7; page 30, line 20 – page 31, line 4; page 38, line 24 – page 41, line 28; FIGS. 13-15, 18, 19, 21A, 21B.

An embodiment of claim 63 relates to a computer program (e.g., *See* FIG. 6) comprising an image handling module (e.g., PACS 10) stored on the machine readable medium, comprising: an image decomposition module configured for decomposing image data (e.g., image data sets 194, 300, 330; image data 402) using lossless wavelet decomposition to produce a plurality of data sets (e.g., sub-bands 308, 310, 312, 314, 320, 322, 324, 326, 408, 410, 412, 452, 454, 456, 458) corresponding to a plurality of resolution levels (e.g., data maps 468, 578) ranging from a lowest resolution level to a highest resolution level; and a tessellation module configured for tessellating desired portions of the plurality of data sets into a plurality of spatial blocks. *See* Application, page 26, line 20 – page 27, line 7; page 30, line 20 – page 31, line 4; page 38, line 24 – page 41, line 28; FIGS. 13-15, 18, 19, 21A, 21B.

6. **GROUNDS OF REJECTIONS TO BE REVIEWED ON APPEAL**

First Ground of Rejection

Appellants respectfully request that the Board review and reverse the Examiner's first ground of rejection, in which claim 17 was rejection under 35 U.S.C. § 112, First Paragraph, as failing to comply with the enablement requirement.

Second Ground of Rejection

Appellants respectfully request that the Board review and reverse the Examiner's second ground of rejection, in which claims 1-15, 17-34, 36-46, 48-53, and 62-70 were rejected under U.S.C. § 102(e) as anticipated by Andrew (U.S. Patent No. 6,763,139).

7. **ARGUMENT**

As discussed in detail below, the Examiner has improperly rejected the pending claims. Further, the Examiner has misapplied long-standing and binding legal precedents and principles in rejecting the claims under 35 U.S.C. §§ 101 and 102(e). Accordingly, Appellants respectfully request full and favorable consideration by the Board, as

Appellants strongly believe that claims 1-15, 17-34, 36-46, 48-53, and 62-70 are currently in condition for allowance.

First Ground of Rejection

The Examiner rejected claim 17 under 35 U.S.C. § 112, First Paragraph, as failing to comply with the enablement requirement. Appellants respectfully traverse this rejection. Apparently, the Examiner misread claim 17 to indicate that the tessellated blocks are *divided* based upon the entropy of each subregion. *See* Final Office Action, pages 2-5. The Examiner may have mistakenly read a comma after the word "compressed" in claim 17.

Claim 17 recites "wherein compressing comprises dividing each tessellated block into subregions *to be individually compressed based upon an entropy of each subregion.*" (Emphasis added).

Contrary to the Examiner's interpretation, dependent claim 17 states that the subregions will be *compressed* based upon the entropy of each subregion. Claim 17 does not state that the *division* of the tessellated block is based upon an entropy of each subregion. Indeed, in claim 17, the tessellated block is divided into subregions with *no* express qualification of the division.

As indicated in both the present specification and by the plain language of claim 17, it is the subsequent *compression* of the subregions that is based upon the entropy of the subregions. *See, e.g.*, Specification, pages 12-16. In the text of claim 17, the phrase "based upon an entropy of each subregion" modifies the adjacent word "compressed" and not the remote word "dividing" as apparently construed by the Examiner. *See* Final Office Action, pages 2-5. A common tenet of sentence construction is that descriptive or subordinate phrases, such as "based upon an entropy of each subregion," are ordinarily placed in close proximity to the word modified or described. Moreover, again, the present specification further supports this interpretation of claim 17 that it is the

compression of the subregions (not the division of the tessellated block into subregions) that is based upon the entropy of a given subregion. *See, e.g.*, Specification, pages 12-16. Accordingly, Appellants respectfully assert that claim 17 is enabled.

Second Ground of Rejection

In the Office Action, the Examiner rejected claims 1-15, 17-34, 36-46, 48-53, and 62-70 under U.S.C. § 102(e) as anticipated by Andrew (U.S. Patent No. 6,763,139). Appellants respectfully traverse this rejection.

Legal Precedent

Anticipation under section 102 can be found only if a single reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 227 U.S.P.Q. 773 (Fed. Cir. 1985). The prior art reference must show the *identical* invention "*in as complete detail as contained in the ... claim*" to support a *prima facie* case of anticipation. *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989) (emphasis added).

In addition, the prior art relied on by the Examiner as anticipatory must be enabling. *See In re Hoeksema*, 3999 F.2d 269, 158 U.S.P.Q. 596 (C.C.P.A. 1968). Mere naming or description of the subject matter in a reference is insufficient. *Elan Pharm., Inc. v. Mayo Foundation for Medical and Education Research*, 346 F.3d 1051, 1054, 68 U.S.P.Q.2d 1373, 1376 (Fed. Cir. 2003). Moreover, an unwitting disclosure which is accidental and unappreciated does not anticipate the present claims. *See Schering Corp. v. Geneva Pharm., Inc.*, 339 F.3d 1373 (Fed. Cir. 2003); *Eibel Process Co. v. Minnesota & Ont. Paper Co.,* 261 U.S. 45 (1923); *Tilghman v. Proctor,* 102 U.S. 707, 26 L.Ed. 279 (1880).

Further, the pending claims must be given an interpretation that is reasonable and consistent with the specification. *See In re Prater*, 415 F.2d 1393, 1404-05, 162 U.S.P.Q. 541, 550-51 (C.C.P.A. 1969); *see also* M.P.E.P. §§ 608.01(o) and 2111. Indeed, the

specification is "the primary basis for construing the claims." *See Phillips v. AWH Corp.*, No. 03-1269, -1286, at 13-16 (Fed. Cir. July 12, 2005) (citations omitted).

The Andrew Reference Does <u>Not</u> Disclose <u>Lossless</u> Wavelet Decomposition

Independent claims 1, 19, 31, 49, and 63 recite, *inter alia*, "*lossless* wavelet decomposition." Independent claim 38 recites, *inter alia*, "*lossless* integer wavelet decomposition." Quite the opposite, the Andrew reference discloses a discrete wavelength transform (DWT) decomposition that utilizes a floating point scheme, whereby floating point values of the coefficients are <u>truncated</u>. *See* col. 5, line 7 - col. 6, line 11; col. 10, lines 23, 37; col. 7, lines 4-33; col. 18, lines 56-59; Fig. 1. In operation, the truncated portions of the coefficients are *irreversibly lost*. *See* col. 7, lines 4-33; col. 18, lines 56-59.

In the Final Office Action, the Examiner disagreed, stating that Andrew teaches both "*lossy* wavelet decomposition" and "*lossless* wavelet decomposition." Final Office Action, page 3 (emphasis added). In support of the contention that Andrew teaches *lossless* wavelet decomposition, the Examiner pointed to column 6, lines 7-11 of the Andrew reference, which reads "if a Haar basis set is used for the DWT (i.e. Haar Transform) an exact reconstruction (or synthesis) of a group of pixels from corresponding coefficient, in the frequency domain, is *possible*." (Emphasis added).

However, Appellants note that a Haar Transform (which employs a floating point scheme) can only provide for an exact reconstruction if, by complete chance, the numerical values in the Haar transform are precise even numbers (so, therefore, the truncation causes only a loss of zero decimal values). Those skilled in the art would recognize that a Haar transform would be of the form (a+b+c+d)/2 (e.g., for averaging of pixels as taught by Andrew). Clearly, such algorithms can only return an integer value (i.e., a value that will <u>not</u> be truncated) if the sum of the numerator happens always to be even. This is even more unlikely for subsequent levels of decomposition (e.g., a sum of 30 will be even for the first level, but may lead to a non-integer quotient in subsequent

levels, depending upon the other values with which it combined). In sum, a Haar basis set can only *accidentally* provide for an exact reconstruction.

Further, the Andrew reference clearly *does not enable* the use of the Haar transform to provide for an exact reconstruction, accidental or otherwise. Instead, Andrew mentions the use of the Haar transform as an aside in a single sentence with no disclosure as to how to utilize or modify such a transform to reliably provide for full reversibility. *See* Andrews, col. 6, lines 7-11; *see also Elan Pharm., Inc.*, 68 U.S.P.Q.2d 1373, at 1376 (explaining that the asserted anticipating reference must provide an enabling disclosure of the desired subject matter; mere naming or description of the subject matter is insufficient).

Lastly, Appellants note that present specification explains that the error of the Haar transform with regard to reversibility is due to the imprecision of floating point operations. *See* Specification, page 27, lines 9-27. Therefore, the present technique as disclosed in the present specification provides for "lifting" of the Haar transform (and other wavelet transformations) to give an integer-based transformation with full reversibility. *See* Specification, page 27, lines 9-27. One of ordinary skill in the art would understand that the specification explains that the claimed "*lossless* wavelet decomposition" is a decomposition that provides for exact reconstruction (full reversibility) and does *not* use a floating point scheme or a scheme that *only* provides for the *possibility* of an exact reconstruction. *See Phillips*, at 16 (explaining that one should rely *heavily* on the *written description* for guidance as to the meaning of the claims).

For these reasons, the Andrew reference cannot anticipate claims 1, 19, 31, 38, 49, and 63 or their dependent claims.

The Andrew Reference Does <u>Not</u> Disclose Lossless <u>Integer</u> Wavelet Decomposition

Independent claim 38 recites "lossless *integer* wavelet decomposition." In stark contrast, the Andrew reference discloses a quantitization or floating point decomposition.

See, e.g., col. 18, lines 21-64. Indeed, the Andrew reference discloses that its transform coefficients are *assumed* to be represented in a binary integer form. *See* col. 10, lines 23-27. Thus, because the coefficients are only treated as integers, the decompression is clearly floating point and not integer-based. After all, Andrew would not require that the coefficients be *assumed or treated* as integers if the coefficients were, in fact, integers. It is plain that the decimal portions of the non-integer coefficients (which are only assumed to be integers) are *truncated and irreversibly lost*, and would not be available during any subsequent processes, e.g., entropy encoding and/or Huffman encoding. *See e.g.*, col. 5, lines 7- col. 7, line 33. Accordingly, for this reason as well, the Andrew reference cannot anticipate independent claim 38 or its dependent claims.

Request Withdrawal of Rejection

For these reasons, Appellants respectfully request that the Board direct the Examiner to withdraw the rejection of claims 1-15, 17-34, 36-46, 48-53, and 62-70 and to allow the claims.

Conclusion

In view of the above remarks, Appellants respectfully submit that the Examiner has provided no supportable position or evidence that claims 1-40 are rendered obvious in view of the prior art. Accordingly, Appellants respectfully request that the Board find claims 1-40 patentable over the prior art of record and reverse all outstanding rejections.

Fees and General Authorization for Extensions of Time

The Commissioner is authorized to charge the requisite fee of $500.00, and any additional fees which may be required, to Deposit Account No. 50-2402, Order No. 15-SV-5372/YOD (GEMS:0064).

Furthermore, in accordance with 37 C.F.R. § 1.136, Appellants hereby provide a general authorization to treat this and any future reply requiring an extension of time as incorporating a request therefor. Furthermore, Appellants authorize the Commissioner to charge the appropriate fee for any extension of time to Deposit Account No. 50-2402, Order No. 15-SV-5372/YOD (GEMS:0064).

Respectfully submitted,

Date: January 17, 2006

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8. **APPENDIX OF CLAIMS ON APPEAL**

1. (original) A method for handling image data, the method comprising:

decomposing the image data into a plurality of data sets using lossless wavelet decomposition;

tessellating at least one decomposed set of the plurality of data sets into a plurality of blocks;

compressing each tessellated block of the plurality of blocks using lossless compression; and

compiling a data stream comprising the compressed plurality of blocks arranged sequentially in a desired order based upon the decomposition and tessellation.

2. (original) The method of claim 1, wherein the lossless wavelet decomposition comprises lossless integer wavelet decomposition.

3. (original) The method of claim 1,wherein tessellating comprises using a fixed block size for the plurality of blocks.

4. (original) The method of claim 1, wherein tessellating comprises addressing each tessellated block with a tessellation index for each dimension of tessellation.

5. (original) The method of claim 4, wherein addressing comprises providing a decomposition level index for identifying a desired set of the plurality of data sets.

6. (original) The method of claim 1, further comprising selectively transmitting at least a portion of the data stream.

7. (original) The method of claim 6, wherein selectively transmitting comprises selecting the portion based upon a desired set of the plurality of data sets and a desired group of the plurality of blocks encompassing a region of interest.

8. (original) The method of claim 7, wherein selecting the portion comprises identifying the desired set and each tessellated block of the desired group using an addressable function.

9. (original) The method of claim 1, wherein the data stream comprises a header, which comprises characteristics of the decomposition, the tessellation, and the compression.

10. (original) The method of claim 1, wherein the data stream comprises a resolution level index for each decomposed set, a tessellation row index for each tessellated block, and a tessellation column index for each tessellated block.

11. (original) The method of claim 1, wherein the desired order comprises an order of desired blocks of the tessellated blocks.

12. (original) The method of claim 1, further comprising storing the data stream based on indices to the decompositions and tessellations.

13. (original) The method of claim 12, wherein storing the data stream comprises storing each of the compressed plurality of blocks in data groups based on the indices.

14. (original) The method of claim 1, wherein the plurality of data sets correspond to a plurality of resolution levels.

15. (original) The method of claim 1, wherein decomposing the image data using lossless wavelet decomposition comprises creating a hierarchical set of sub-bands, one set comprising a low frequency component at a lowest resolution level and remaining sets comprising high frequency components at successively higher resolution levels.

16. (original) The method of claim 15, wherein compressing each tessellated block comprises compressing the high-frequency components using actual values, and further comprising compressing the low frequency component at the lowest resolution level using prediction errors.

17. (original) The method of claim 1, wherein compressing comprises dividing each tessellated block into subregions to be individually compressed based upon an entropy of each subregion.

18. (original) The method of claim 1, comprising reconstructing an image at least partially from the tessellated blocks.

19. (original) A method for retrieving image data, the method comprising:

identifying data according to a decomposition level index and tessellation block indices, wherein the decomposition level index refers to data sets generated from an image by lossless wavelet decomposition, and the tessellation block indices refer to blocks tessellated from the data sets; and

transmitting a data stream of the data identified by the decomposition level index and the tessellation block indices, wherein the data stream is ordered based upon the decomposition level index and the tessellation block indices.

20. (original) The method of claim 19, wherein the decomposition level index corresponds to a resolution level.

21. (original) The method of claim 19, comprising a plurality of the decomposition level indices.

22. (original) The method of claim 19, wherein the tessellation block indices comprise a row index and a column index for addressing spatial coordinates of the blocks.

23. (original) The method of claim 22, wherein the data stream is ordered based upon the spatial coordinates of the blocks.

24. (original) The method of claim 19, wherein transmitting the data stream comprises transmitting at least part of a desired one of the data sets identified by the decomposition level index, the desired one corresponding to an image resolution relatively higher than a locally stored one of the data sets.

25. (original) The method of claim 24, wherein transmitting the data stream comprises transmitting specific addressable groups of the blocks for the desired one.

26. (original) The method of claim 19, wherein the lossless wavelet decomposition comprises lossless integer wavelet decomposition.

27. (original) The method of claim 19, wherein the blocks tessellated from the data sets have a fixed block size.

28. (original) The method of claim 19, wherein the data stream comprises data block sets, each comprising tessellated sub-band data at one index set of the decomposition level index and the tessellation block indices.

29. (original) The method of claim 19, wherein the data stream comprises an addressable data block comprising a plurality of data blocks identified by the decomposition level index and the tessellation block indices.

30. (original) The method of claim 19, wherein transmitting comprises transmitting over a network.

31. (original) A method for handling image data, the method comprising:

decomposing the image data into a plurality of resolution levels using lossless wavelet decomposition;

tessellating at least part of one level of the plurality of resolution levels into a plurality of blocks;

compressing tessellated data for the at least part using lossless compression; and

storing the tessellated and compressed data by referencing the plurality of resolution levels and the plurality of blocks.

32. (original) The method of claim 31, wherein the lossless wavelet decomposition comprises lossless integer wavelet decomposition.

33. (original) The method of claim 31, wherein the plurality of resolution levels comprise a lowest resolution level having a low frequency component and a remaining plurality of resolution levels comprising high frequency components..

34. (original) The method of claim 33, wherein tessellating at least part of one level comprises tessellating only the high frequency components.

35. (original) The method of claim 33, wherein compressing comprises compressing the high frequency components using actual values and compressing the low frequency component of the lowest resolution level using prediction error values.

36. (original) The method of claim 31, further comprising accessing portions of the image data by addressing the tessellated and compressed data based on indices for the plurality of resolution levels and the plurality of blocks.

37. (original) The method of claim 31, wherein storing the tessellated and compressed data comprises addressably storing the tessellated and compressed data based

on a decomposition level index for the plurality of resolution levels and tessellation block indices for the plurality of blocks.

38. (original) A method of storing image data, the method comprising:

decomposing the image data into a plurality of resolution levels using lossless integer wavelet decomposition;

tessellating at least part of each decomposed level of the plurality of resolution levels into a plurality of spatial blocks; and

storing data for the plurality of spatial blocks as a plurality of addressable data blocks comprising indices for the resolution levels and spatial image blocks.

39. (original) The method of claim 38, wherein the plurality of resolution levels comprise a lowest resolution level and a remaining plurality of resolution levels.

40. (original) The method of claim 39, wherein the plurality of resolution levels comprise a lowest resolution level having a low frequency component and a remaining plurality of resolution levels comprising high frequency components.

41. (original) The method of claim 40, wherein tessellating at least part of each decomposed level comprises tessellating the high frequency components.

42. (original) The method of claim 38, wherein the plurality of spatial blocks have a fixed block size.

43. (original) The method of claim 38, wherein storing comprises ordering the plurality of addressable data blocks based on the indices.

44. (original) The method claim 43, wherein storing comprises forming a data string of the plurality of addressable data blocks.

45. (original) The method of claim 44, wherein forming the data stream comprises providing a header having decomposition statistics and tessellation statistics for the plurality of addressable data blocks.

46. (original) The method of claim 38, wherein storing comprises compressing each of the plurality of addressable data blocks.

47. (original) The method of claim 46, wherein compressing comprises compressing high frequency components of each of the plurality of resolution levels based upon actual values and compressing a low frequency component of a lowest resolution level of the plurality of resolution levels based upon prediction error values.

48. (original) The method of claim 38, further comprising accessing a desired portion of the plurality of spatial blocks based on the indices of the addressable data blocks.

49. (original) A system comprising:

an interface comprising:

a decomposition module configured for decomposing image data using lossless wavelet decomposition to produce a plurality of data sets corresponding to a plurality of resolution levels ranging from a lowest resolution level to a highest resolution level;

a tessellation module configured for tessellating desired portions of the plurality of data sets into a plurality of spatial blocks; and

an addressing module configured for indexing the desired portions into a plurality of addressable data blocks based on the resolution levels and coordinates of the spatial blocks; and

a memory device configured to store the plurality of addressable data blocks.

50. (original) The system of claim 49, wherein the interface comprises a compression module configured for compressing each of the addressable data blocks.

51. (original) The system of claim 49, wherein the interface comprises a storage control module configured for storing each of the addressable data blocks individually on the memory device.

52. (original) The system of claim 51, wherein the image storage module comprises an ordering module configured for storing the addressable data blocks based on the coordinates of the spatial blocks and the resolution level.

53. (original) The system of claim 49, wherein the interface comprises a transmission module configured for transmitting a desired spatial portion and resolution level of the image data based on indices of the addressable data blocks, the indices comprising a resolution level index and at least two coordinate indices for the spatial blocks.

54. (original) The system of claim 49, wherein the system comprises a picture archiving and communication system.

55. (original) The system of claim 49, further comprising one or more imaging systems.

56. (original) The system of claim 55, wherein the one or more imaging systems comprise an MRI system.

57. (original) The system of claim 55, wherein the one or more imaging systems comprise a computed tomography system.

58. (original) The system of claim 55, wherein the one or more imaging systems comprise a positron emission tomography system.

59. (original) The system of claim 55, wherein the one or more imaging systems comprise a radio fluoroscopy system.

60. (original) The system of claim 55, wherein the one or more imaging systems comprise a computed radiography system.

61. (original) The system of claim 55, wherein the one or more imaging systems comprise an ultrasound system.

62. (original) The system of claim 49, wherein the lossless wavelet decomposition comprises lossless integer wavelet decomposition.

63. (original) A computer program comprising:

a machine readable medium; and

an image handling module stored on the machine readable medium, comprising:

an image decomposition module configured for decomposing image data using lossless wavelet decomposition to produce a plurality of data sets corresponding to a plurality of resolution levels ranging from a lowest resolution level to a highest resolution level; and

a tessellation module configured for tessellating desired portions of the plurality of data sets into a plurality of spatial blocks.

64. (original) The computer program of claim 63, wherein the image handling module comprises an addressing module configured for indexing the desired portions into a plurality of addressable data blocks based on the resolution levels and coordinates of the spatial blocks.

65. (original) The computer program of claim 64, wherein the image handling module comprises a compression module configured for compressing each of the addressable data blocks.

66. (original) The computer program of claim 64, wherein the image handling module comprises a storage control module configured for storing each of the addressable data blocks individually on the machine readable medium.

67. (original) The computer program of claim 64, wherein the image handling module comprises an access module configured for providing access to a desired spatial portion and resolution level of the image data based on indices of the addressable data blocks, the indices comprising a resolution level index and at least two coordinate indices for the spatial blocks.

68. (original) The computer program of claim 67, wherein the access module comprises an ordering module configured for transferring the addressable data based on the indices.

69. (original) The computer program of claim 63, wherein the lossless wavelet decomposition comprises lossless integer wavelet decomposition.

70. (original) The computer program of claim 63, wherein the plurality of data sets comprise a lowest resolution data set having a low frequency component and a remaining plurality of data sets comprising high frequency components.

9. APPENDIX OF EVIDENCE

None.

10. APPENDIX OF RELATED PROCEEDINGS

None.